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THERMAL BURNS*

SYLVESTER W. RENNIE, M. D., **

Wilmington, Del.

I should like, this evening, to talk about a subject which is not in my present field, but which is of vital importance to all medical men.

Fortunately, in 1941, Koch, with others, wrote some very interesting articles on the treatment of burns. These were read by many who were entering the military service. The results following the Boston and Hartford fires in civilian life, and the results in military hospitals, where these principles were adhered to, show that burn cases can be so handled that the mortality rate will be far less than in years past. There were 10,350 civilian deaths from burns in 1943.

I would like to give you some idea of the method we employed in the South Pacific in the treatment of thermal burns. Because of the overwhelming numbers of cases which would descend on a hospital, it was decided that the medical men, along with the surgeons, would handle these cases, except those which required major surgery.

Burns in themselves are seldom fatal, and almost all deaths are due to complications arising during their clinical course:

I. SHOCK

Badly burned people die from shock—2 to 3% in the first few hours from primary shock; 60 to 80% from secondary shock later on.

Shock is a profound nervous and circulatory upset, factors in the production of which include:

- (a) Pain—neurogenic shock.
- (b) Loss of fluids—8% of body fluids is in the blood, 20% in the skin, so that local edema of a burned area must seriously deplete the available circulatory fluid.
- (c) Neuropsychiatric factors—especially

* Read before the New Castle County Medical Society, Wilmington, May 15, 1945.

** Formerly Major, M. C., A. U. S.

notable in cases of burns of the face, abdomen, and genitalia, and greatly aggravated by the excitement and stress of action.

Shock is increased by:

- 1. Exposure and fatigue.
- 2. Lack of food.
- 3. Handling and moving.
- 4. Painful dressing—"That which hurts is wrong."
- 5. Anesthesia—This has been shown experimentally during the past year. Narcotized animals did not live as long as those not narcotized.

II. TOXEMIA

Developing from 2 to 6 days after the injury is responsible for numerous fatalities, and is best diagnosed by the clinical examination, which shows anorexia, restlessness, pyrexia, etc., and albuminuria, casts, high nitrogen excretion, salt loss, and oliguria.

III. SEPSIS

Is responsible for later fatalities in burns cases, and bacteriological examination has shown in many cases that the causative organisms are normally present in the upper respiratory tract.

It must be emphasized that, though the discussion of the treatment of burns centers largely on local applications to the burn itself, efficient general care is of paramount importance.

It is an undeniable fact that deaths in burn cases are due to the complications, and though due consideration must be given to the efficiency, the function of the part, and the cosmetic appearance, the primary essential is to save life.

It is not necessary to mention field treatments here, but those treatments of shock are important.

In the general treatment of a patient, the control of shock is paramount.

The relief of pain is accomplished by morphine.

Fluids are lost both through the oozing of

the burned area, and through the increased permeability of the vessels allowing severe edema extending outside the burned area.

Since plasma is the thing which is lost, it is the best of all fluids to be replaced. For estimation of amounts required there are many methods.

1. Hemoglobin estimation.

90%	250 e. c.
95%	250 e. c.
100%	500 e. c.

That is 250 e. c. of plasma for every 5 points above 90%.

2. If laboratory facilities are available the hematocrit estimation can be done, and 100 e. c. of plasma given for every point above 45.

If the plasma proteins are low, 25% more plasma can be given for every gram below 6 gm.

3. 50 e. c. of plasma for every 100,000

R. B. C. over 5,000,000.

When laboratory facilities are not available plasma needs can be calculated by Berkow's formula of percentage of body surface, giving 50 e. c. of plasma for every 1% of body surface affected by a deep burn. After 12 hours additional plasma may be necessary.

Adrenal cortex is to be used in severe shock. This can be extended for many days.

Other methods of combating shock are necessary, such as elevation of feet, quiet, oxygen, etc.

To prevent Toxemia an adequate fluid intake is essential. Some patients tend to take too much fluids after the first day. 4,000 e. c. of fluid with 10 gms. of salt is a good level of intake daily. A urinary output exceeding 40 oz. (120 e. c.) and of a specific gravity 1.015 should be arrived at.

Blood chloride estimation can be done to govern the chloride intake.

To prevent sepsis the burns are treated with the strictest asepsis. If patient is comfortable and temperature normal there is no indication to interfere with the dressing, and on these standards the initial dressing (about which I will say a word in a moment) may be left on for 10-14 days.

Tetanus toxoid or serum should be given to all patients.

During the course of recovery the following states may arise:

1. Increase in body metabolism.
2. Proliferation of granulation tissue.
3. Epithelialization.
4. Secondary anemia.
5. Added requirements of vitamins.
6. Acidosis and liver damage.
7. Loss of chlorides over a long period.
8. Loss of amino acids over a long period.

Blood transfusions are of great benefit where anemias occur.

Now I would like to discuss the local treatment of these burn cases. First it is necessary to treat the shock, but while doing so the burn should be covered with a towel, or any clean article present.

Masks are worn by all personnel handling a patient with an open, undressed burn. As Koch stated in 1941, "it is important to prevent infection, as well as treat a dirty burn."

"With a burned surface free from infection, covered with an occlusive compression dressing and left undisturbed, a patient can be comfortable for 10 to 14 days, and 'emerge from the cocoon', at the end of that period with the burned surface completely healed wherever there has not been whole thickness destruction of skin."

The idea is to convert a dirty open wound into a closed clean one. Clothing should be soaked in saline and cut away under aseptic precautions. A gloved, masked doctor cleanses the burned surfaces as gently as possible, with white soap and water—*never* green soap, and *never* brushed, always using cotton.

If fuel oil is present on the burn this may be cleaned off with mineral oil.

Loose destroyed tissue which has not been washed away is cut away with steril forceps and scissors. Blisters can be left untouched; most of these will give way under a well applied dressing.

The ideal dressing should be one which:

- a. Relieves pain.
- b. Is bacteriostatic.
- c. Encourages epithelial regeneration.
- d. Can be easily prepared, stored, and applied.
- e. Is easily removed.
- f. Permits drainage.
- g. Is firm enough to prevent fluid loss.

Whether the fine meshed gauze applied directly to the wound surface should be impregnated with boric acid ointment, petrolatum, or a sulfa preparation, depends on the physician. There is no definite evidence to show one so much better than the other. But a non-irritating dressing provides favorable conditions for wounds healing.

Strips of fine meshed gauze impregnated with a bland ointment are used to cover the entire burned area and somewhat beyond. Mechanics waste or sea sponges or sufficient gauze is used to cover this first non adhering gauze. Elastic bandage is now used to apply compression over the whole surface.

This is a simple application of a principle to arrest the loss of fluids, and also the application of the innett Orr principle of the treatment of wounds by the infrequent dressing method. It can be used on any part of the body.

The associated use of the sulfa drugs, either applied locally or by mouth, and the use of penicillin has further increased the efficacy of this dressing.

It is true that the exudation of plasma from a burn and into the soft tissues around it is comparable to hemorrhage following a crushing injury. It can be limited by compression.

An injured part needs rest. Utilizing plaster of Paris in the form of a splint, in conjunction with a compressed dressing, again aids the healing.

It is important to realize that a granulating wound is not a healed wound.

Skin grafting is done early, following a compression dressing. Again the idea is to make a closed wound.

Sometimes at the change of the first dressing areas can be grafted. The use of Padgett's dermatone to cut grafts of a thickness of .012 in. has enhanced the recovery of a burned patient and has taken a lot of "ifs" out of skin grafting. Special technique is required but it is not difficult. This idea of early grafting cannot be used with such methods of burn treatment as tannic acid.

Prolonged granulation leads to increased cosmetic and functional deformity. Thus at each dressing of a burn the operating room should be set up to go ahead with a graft.

The later phase of burn treatment lies in the field of plastic surgery, and I shall not attempt to talk about that.

As a summary of the essential points for successful treatment of burns these items are important:

1. The treatment of shock before any local treatment is considered.
2. The adequate use of intravenous plasma in quantities determined by the degree of hemoconcentration present.
3. The avoidance of applications which will make the final local treatment less effective.
4. The use of sulfa drugs locally or by mouth, and the use of penicillin.
5. Compression dressings on the principles advocated by Koch and Orr.
6. Early skin grafting.

This is the treatment of thermal burns universally accepted at this time.

TOTAL GASTRECTOMY

G. S. SERINO, M. D.,*

Wilmington, Del.

My first twelve consecutive subtotal gastrectomies for gastric or duodenal ulcers were performed without a death. These patients had two-thirds or more of their stomachs removed. All of them are well, enjoying life, and performing their usual work.

I have now performed three total gastrectomies. Two of these cases presented the accepted indications for the operation of total gastrectomy, and shall not be discussed in this paper. My present purpose is to present in detail a successful total gastrectomy performed on a patient who was considered inoperable.

During the past several years I have seen a goodly number of late cancers of the stomach. These cases following extensive study and exploratory laparotomy have been labeled "inoperable cancers of the stomach." With this diagnosis such cases have been closed with no attempt at curative surgery. We are all familiar with the miserable status of such patients until they finally succumb to their disease.

A plea for early diagnosis is in order. How-

* Attending Surgeon, St. Francis Hospital.

ever, until this ideal is attained the surgeon must of necessity assume a greater responsibility. Total gastrectomy affords little hope for a permanent cure in these late cases but it does prolong life, protects against obstruction, and adds materially to the patient's comfort.

Finney and Rienhoff¹ credit Schlatter with performing the first successful total gastrectomy in 1897. Roeder² in 1933 in a comprehensive study on this subject reported only 88 cases of total gastrectomy which had been performed up to that time. He reports an operative mortality of 50 per cent in these 88 cases. Lahey³ in 1941 reported 30 cases in which the operation of total gastrectomy was performed with 8 deaths. Thus it appears that with increased operative ability and improved technique, along with careful preoperative operation, the mortality rate has been reduced from its former almost prohibitive level to a rate now considered practicable in selected cases. To this I add a case of total gastrectomy performed successfully on a patient who was not considered as a select case for operation. This case represents the so-

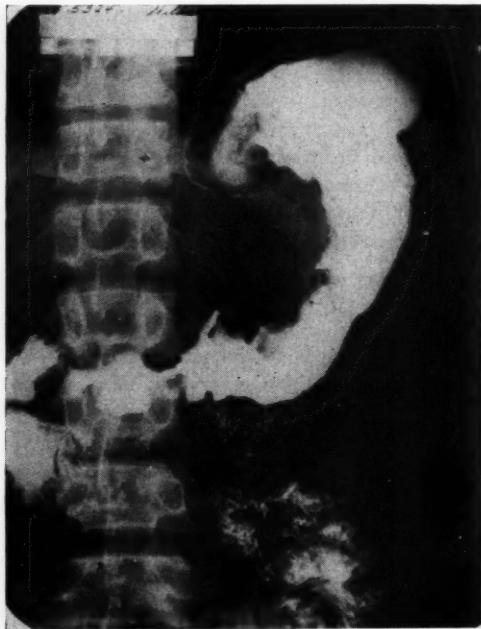


Fig. 1. Roentgenogram showing extensive involvement of stomach by carcinoma.

called inoperable group of cancers of the stomach.

CASE REPORT

F. W., male, age 50, referred to my service at the St. Francis Hospital by Dr. Lawrence Rigney on June 11, 1944. His chief com-

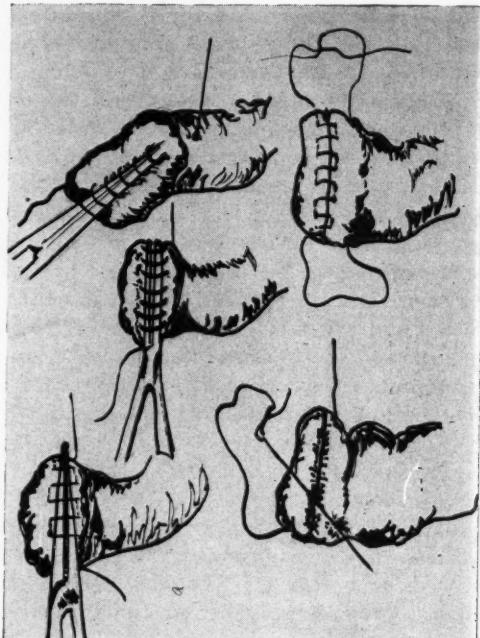


Fig. 2. Duodenum closed by the Parker-Kerr Method.

plaints were severe and persistent abdominal pain, and vomiting of food and blood several times daily. His complaints began two years previously, when he first noted epigastric distress and occasional nausea. Nine months prior to admission vomiting started, and the epigastric distress changed to severe and continuous pain. During this same period the patient lost 40 pounds of weight.

Studies revealed 4,200,000 red cells; leukocytes, 8,450; hemoglobin, 60 per cent. Urine showed albumin 2 plus. Blood sugar, 92 mg./100 cc. Blood urea nitrogen, 18 mg./100 cc. Icterus index, 3 units bilirubin. Positive blood in gastric analysis; no hydrochloric acid. Blood and spinal fluid negative for syphilis. Low blood chloride and protein levels. A large mass was palpable in the epigastrum. A roentgenologic examination by Dr. W. W. Lattomus showed a large defect involving almost the entire lesser curvature. "This represents a large malignant involvement and I believe that this is inoperable"

(Fig. 1). Flat plate of the chest shows both diaphragms smooth and at normal levels. The lung fields are clear.

The pre-operative preparation consisted of

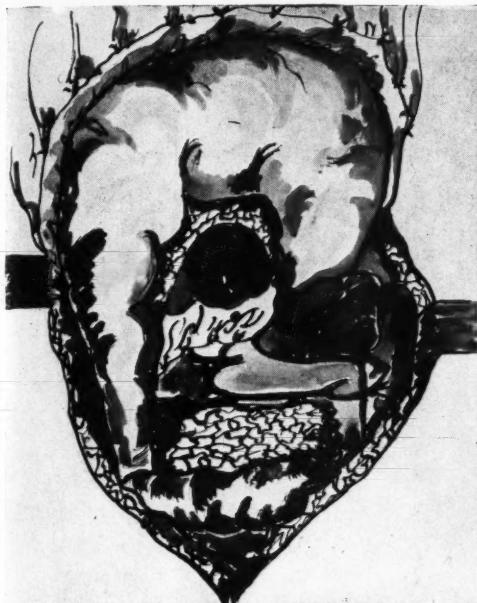


Fig. 3. Exposure of esophagus, showing metastatic carcinoma in liver.

daily gastric lavages, blood and plasma transfusions, parenteral vitamin, glucose and saline infusions. The status of cardiac and renal reserve were established.

Operation, June 22, 1944. Continuous spinal anesthesia as advocated by Lemmon⁴ was used. The abdomen was opened through a high mid-rectus incision. Exploration showed the stomach to be completely involved with carcinoma. The lymph nodes along the curvature were palpable, varying in size from 1 to 3 cm. They literally studded the entire lesser curvature. Metastatic nodes were also found in the liver and rectal shelf.

Presented with such an extensive lesion the question arose as to which procedure to utilize in this particular case. The two most common procedures, gastrostomy or gastro-enterostomy would be of no value here because of the pyloric obstruction and the extensive involvement of the stomach.

X-ray and radium are of no value in such a finding.

We could utilize one of two remaining procedures:

(1) Doing no surgery and closing the abdomen. This has been the procedure of choice by most surgeons in the past. This procedure obviously has nothing to offer.

(2) The operation of total gastrectomy. Most textbooks state and the majority of surgeons believe that such an extensive lesion of this type is a contraindication for total gastrectomy. I am not in full agreement with this attitude.

Factors not in favor of total gastrectomy are:

(1) The mortality rate for this procedure varies between 50 and 70 per cent.

(2) An extensive review of the literature in 1933 revealed the fact that only 88 cases of total gastrectomy had been performed. In no instance was total gastrectomy performed in the presence of extensive involvement as here described.

(3) The survival rate for those cases

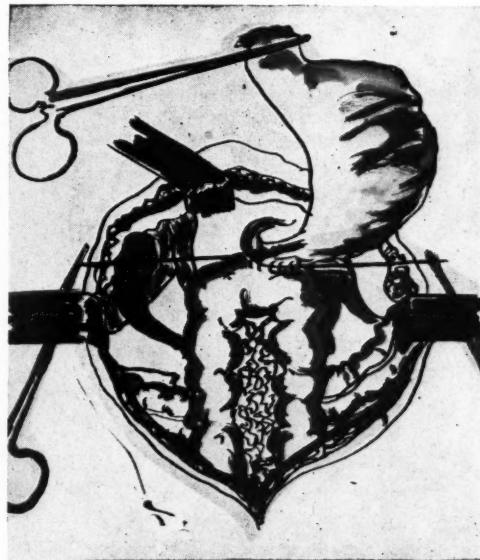


Fig. 4. Stomach retracted upward. Esophagus sutured to jejunum showing posterior sutures.

which survived operation was less than 18 months, with few exceptions.

Factors in favor of total gastrectomy are:

- (1) Freedom from severe symptoms.
- (2) The pursuit of a useful existence.

(3) A resumption of the enjoyment which goes with the partaking of food.

(4) In times of war we release the constant attention these cases require from doctors, nurses, and relatives.

(5) What experience have I had and what were my results in the field of gastric surgery in the past? My experience in the past 3 years with subtotal gastrectomies for lesions other than cancer shows a mortality of zero, in a series of 12 consecutive cases.

Based upon these five factors total gastrectomy, with wide resection, was therefore selected as the only procedure offering this patient any hope of temporary relief, since there is no other form of treatment the acceptance of desperate risks is entirely justifiable.

Operative Procedure. The operative procedure followed here is that advocated by Leahy⁵, with some modifications. The stom-



Fig. 5. Posterior sutures completed.

ach was mobilized by ligating all blood vessels on both the greater and lesser curvatures from duodenum to esophagus. This was a

wide dissection leaving all of the omentum with its enlarged lymph nodes attached to the



Fig. 6. Anterior closure completed.

stomach. The duodenum was divided by cautery between clamps. The distal end was closed by the Parker-Kerr method. The stomach was covered with moist gauze and was used for traction, drawing the esophagus downward. Mobilization of the left lobe of the liver was accomplished by division of its lateral ligament.

Diaphragmatic peritoneal flaps were reflected. A loop of jejunum 22 inches from the duodenojejunial junction was brought up anterior to the transverse colon and sutured to the posterior wall of the esophagus with silk sutures. The esophagus was incised posteriorly and contents aspirated. An incision was next made in the jejunum to compare to the esophageal opening. The jejunum and posterior margin were sutured by a continuous lock-stitch of chromic catgut. The stomach was then removed by incising the anterior wall of the esophagus. A Connell suture was used to close the anterior edges. Interrupted

silk sutures completed the anastomosis. The reflected peritoneal flaps were then sutured to the jejunum below the anastomosis. Sutures then were passed from diaphragm to jejunum to further help support the anastomosis. Enter-enterostomy was then performed about 8 inches from the esophageal anastomosis. The abdomen was closed in layers.

The operation was begun at 11:15 A. M. and ended at 1:45 P. M. A total of 500 mg. of novacaine was used. During the course of the operation the patient was given 1,000 cc. of whole blood and 1,000 cc. of normal saline, plus 5 per cent glucose. Before operation his pulse was 60; blood pressure, 140/80; respirations, 18. After the operation his pulse was 80; respirations, 30; blood pressure, 130/80. His condition was good throughout the operation. Convalescence was entirely without complications. The highest temperature recorded was 101; the highest pulse rate was 100. After four days these were normal and continued normal until discharged. Fluids, food, and vitamins were supplied by intravenous administration for five days, when feedings by mouth were begun.

Pathologic Examination: Dr. Douglas M. Gay. Gross: "The specimen consists of the entire stomach. On the lesser curvature near the pylorus there is a fungating tumor rising from a base 5 cm. in diameter to height 3 cm. above the mucous membrane. The entire thickness of the stomach wall is invaded and regional lymph nodes are enlarged up to 1 cm. in diameter with metastases."

Microscopic: The tumor is an adenocarcinoma derived from the gastric mucosa and has the form of a papillary structure made up of irregularly anastomosing strands of irregular columnar cells. The underlying tissues are invaded and tumor of similar appearance invades the lymph node selected for study. Portions of the primary tumor are necrotic, and there is an abundant polymorphonuclear infiltration."

Diagnosis: "Adenocarcinoma of stomach. Secondary carcinoma of lymph nodes."

The patient had a strikingly smooth convalescence and was discharged and walked out of the hospital on the 20th post-operative

day. The patient has survived surgery for a period of five months without pain and vomiting, and is capable of doing light work. He has lived long enough to securely confirm the fact that without a stomach and with a loop of jejunum attached to the esophagus serving as a substitute for one, patients can maintain weight and strength and live in comfort. The ability of this patient to compensate so well for the disturbance in physiology which this operation of necessity produced is remarkable.

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O. R. Supervisor Held Responsible

Chicago, June 26.—The Illinois Appellate Court has held an operating-room supervisor solely responsible for payment of a \$5,680 judgment to a husband whose wife died because a sponge was sewn into her during a Caesarean childbirth.

The ruling absolved the Women's and Children's Hospital, of Chicago, and a student nurse of joint responsibility which had been attached to them in a lower court, and placed full responsibility on Beulah Cox, charged with supervision of the sponge count in the operation.

The Appellate Court decision was made in a review of the case of Edward Piper, which originally asked \$10,000 for the death of his wife, Helen, on March 22, 1942.

The child, a girl, delivered in the operation, is alive and well. —*Wilm. Journal-Every Evening*, June 27, 1945.

[Ed. Note—This unusual finding illustrates again the unpredictable nature of court decisions in malpractice suits. In no other phase of law do precedents and decisions differ so widely. Lesson: always keep your malpractice insurance paid up and in force!]

CLINICAL CASES FROM THE HOSPITALS

HYDRONEPHROSIS IN A CHILD

HENRY V'P WILSON, M. D.,
Dover, Del.

Enlargement of the kidney in childhood is usually due to congenital polycystic disease, primary tumor, or congenital hydronephrosis. Congenital polycystic disease of the kidney is always bilateral. Primary tumor of the kidney is, of course, unilateral and usually gives pain and there is an enlarging mass; but usually it is associated with definite urinary findings, either frank hemorrhage or microscopic blood in the urine. Hydronephrosis in childhood gives attacks of pain, usually progresses until there is a palpable mass and eventually leads to the destruction of the kidney. It is differentiated from congenital polycystic disease by being unilateral, and from primary tumor of the kidney by lack of anemia due to kidney bleeding. Pyelogram, either intravenous or transurethral under anesthesia, gives fairly characteristic shadows in each of the three diseases.

CASE REPORT

Master J. R. S., Seaford, Delaware, aged 7, referred by Dr. H. M. Manning, Kent General Hospital, No. 21649. Admitted June 5, 1945. Operation, June 6, 1945. Discharged June 15, 1945.

Complaint. Attacks of pain in left side.

Present Illness. About 10 days ago there was sudden onset of severe pain in his left side, and this lasted with almost constant severity for 48 hours. The pain then gradually subsided but soreness has continued. He has complained of little pain or soreness in the last two days. There was vomiting the day of onset. There has been no diarrhea or constipation and no difficulty in voiding. The pain was localized in the left upper part of the abdomen and apparently gave discomfort in his back about the level of the umbilicus.

Past History. Usual exanthemata of early childhood. When he was 9 months old had attacks of pain occasionally, usually at night,

accompanied by vomiting, which lasted about one-half hour, but there was no localization. The attacks continued several times a year and when he was something over 2 years old he was able to tell his mother the pain was in his left back. Between attacks he has been quite normal in his activities. There have been about four attacks in the last year.

Examination. Child is a healthy looking boy of 7. Temperature, 98.4. Pulse, 80. Respirations, 22. Color of skin and mucus membranes is good. He is cheerful and in no apparent discomfort. Head shows no sinus or mastoid tenderness, and there is no discharge or deafness of the ears. Teeth are good. Tonsils have been cleanly removed. There is no general glandular enlargement and no glands are enlarged in the neck. Thyroid is not enlarged, and there are no eye signs of Graves' disease. Heart and lungs are clear to percussion and auscultation. The abdomen shows a wide flaring costal margin, and the left upper quadrant appears more full than any other part of the abdomen, and yet there is no visible mass. There is slight bulging in the left flank. The liver edge cannot be felt. The right kidney is not enlarged and is not tender. In the region of the left kidney there is a large mass, somewhat movable, which bulges in the back and the flank and can be pressed forward and outlined as filling the left upper quadrant from mid-line outward. It is moderately tender.

Hemoglobin, 67 per cent. WBC, 9,800. Differential normal. Urine, no albumen; no sugar; microscopic shows no white or red blood cells or casts but does show numerous motile bacteria.

Intravenous pyelogram is quite normal on the right side. There is no excretion of the dye on the left side.

Preoperative Diagnosis. Enlargement of left kidney, congenital hydronephrosis.

Operation. Operation was performed June 6, 1945, under cyclopropane and oxygen anesthesia, with a very small amount of ether added. A left nephrectomy was done, and the kidney was so large that more than usual division of the muscles was necessary. The perirenal fat was practically nonexistent. Dissection of the kidney showed practically no inflamma-

tory adhesions, but it was soon found that the kidney was very large and with the cortex in the incision, the mass extended to the midline. No aberrant vessels were seen, and the ureter was quite normal. All ties and sutures used in the nephrectomy were of No. 70 cotton. The specimen removed measured 15 cm. from upper to lower pole and 10 cm. transversely. The specimen removed contained 150 cc. of urine. It is noteworthy that during the operation rather suddenly as the ureter and opening into the pelvis fell into line, there was a sudden diminution in size of the kidney as urine passed rapidly down the ureter. I would judge that the kidney before this emptying held easily 500 cc. of urine. After removal, the kidney on section showed a tremendously enlarged pelvis and great dilatation of the calyces, so that the parenchyma measured only 4 millimeters in thickness. The cortex and the medulla could not be well distinguished in the gross. The position of the kidney was normal; and yet on section it was seen that there was a kinking at the uretero-pelvic juncture due to the position at which the ureter joined the pelvis, so that a valve was formed. Obviously at times this valve permitted no flow of urine, and the child had an attack of pain. Possibly during each attack the pelvis became distended to such a point that the valve would open permitting escape of some urine, with resulting subsidence of pain.

Postoperative Course. The child made an uneventful recovery and was discharged on his 9th postoperative day without fever; incision cleanly healed; and with no discomfort or tenderness in his abdomen.

In this particular case the distension of the pelvis and calyces had progressed to a point of great destruction of kidney tissues, and there was no question of saving the kidney. However, in a case of less severity the question of conservation of the kidney might well

arise. Plastic operation upon the pelvis and reimplantation of ureter certainly would be worth a trial. When the other kidney is normal and the affected kidney is non-functioning due to pressure from dilatation, nephrectomy would be the operation of choice, giving no chance of reformation of the hydronephrosis, of infection in the kidney, or of sympathetic disease of the other kidney from infection.

Additional Pay Proposed With Medical Badge

On June 19th the House of Representatives passed Bill H. R. 2477 which provides additional pay, corresponding to combat pay, for medical officers and enlisted men who have served with the troops under enemy fire and are entitled to wear the Medical Badge. The bill reads as follows:

That during the present war and for six months thereafter, any enlisted man of the Army who is entitled, under regulations prescribed by the Secretary of War, to wear the medical badge shall be paid additional compensation at the rate of \$10 per month: Provided, That any enlisted men whose right to wear the medical badge has been temporarily suspended may, under regulations prescribed by the Secretary of War, continue to be paid such additional compensation.

The provisions of this act shall become effective on the first day of the month following its enactment. The additional compensation provided by this act shall not be paid for any retroactive period prior to the date of the actual award of the medical badge.

"Sulfa" In Wounds Discontinued

The Army's accumulated experience in wound management does not justify the local use of any chemical agent in a wound as an anti-bacterial agent, according to the Office of The Surgeon General. The local use of crystalline sulfonamides (sulfa powder) has therefore been discontinued except in the case of serious cavities where its use, while permissible under the direction of the surgeon, is not recommended. This subject is covered by War Department Circular No. 160 as amended by W. D. Circular No. 176, 1945.

Letters From Overseas

Barons Cross,
Town of Leominster,
Herefordshire, England
20 May 1945.

Dear Dr. Bird:

Have just received the Feb. & March issue of the State Medical Journal. Its contents were most interesting. Makes a fellow feel a little closer to home when he receives news of friends.

I was interested and pleased in your effort to encourage publication of the interesting cases found in our hospitals. I heartily endorse the program and wish you great success in it. I believe it is a means of binding our group into a more closely knit association because we learn what our confreres are doing. Continue the effort. My best wishes are with you.

Sincerely,
CAPT. JOHN B. BAKER, M. C.

Dear Miss Ferry:

I was very glad to receive your V-Mail today, although it did take a little while getting here, yet it was warmly received.

I did see Miss Nickerson, and she looked well. Miss Brittingham was sleeping, so I didn't have a chance to contact her. Incidentally our former Bn. Commander is now in charge of her hospital unit.

A newspaper clipping which I received told of Dr. Skura receiving a Bronze Star. It has been quite a while since I had a letter from him, so I don't know much about him.

I visited the internment camp at Buchenwald, and saw some gruesome sights. It really is all true about the brutality of the Nazis. The torture chamber was a hideous spectacle of what would have been in store for all of us if the Nazis had come to America. I saw masses of the dead piled up in the yard; there were skeletons in the crematorium which had partially been burned. It really is too horrible to describe.

Regards to you all.
CAPT. IRVIN I. BERLIN, M. C.

Dear Miss Ferry:

I don't remember who owes a letter, but it is probably I. Right now we are in a beautiful farming section of Germany operating a hospital for recaptured Allied military personnel. These are soldiers formerly held as prisoners by the Germans and they were liberated from the various prison camps as our side moved forward. We have all nationalities, but mostly Russians and Poles and quite a few are pitiful sights. There is all sorts of medical work, but the one big thing is tb. and half of our patients have it and are far advanced.

We are set up in a large monastery, but in addition to that we have tents pitched for ambulatory and the tb. patients. When we first came to this place, the patients had been starved for such a long time, that in addition to the food we gave them, they were always rummaging through the garbage cans. It became quite a problem. As far as I can gather, this monastery had quite a few different uses. It is not too old, but shortly after Hitler came into power, it was used by the Nazis as more or less of a baby factory. All unattached pregnant females were housed here. After the war started, the Germans used the place as a hospital for their own paratroopers, and since the Americans overran the area it has been housing former prisoners.

All the officers and nurses are living here in the monastery buildings excepting the three majors and myself; we are living with a nearby farmer. His house is large, very comfortable and each of us has a room on the second floor complete with beds and inner spring mattresses. Had a nice surprise last week end, Sloving slowly walked in on us. He looks good.

Sincerely,
LT. COL. ANDREW, M. C.

Every home or environment in which there is an infectious case of tuberculosis is a stronghold of the tubercle bacillus which must be "cleaned out" through the persevering use of modern scientific control measures.

—Robert E. Plunkett, M. D.

+ Editorial +

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WAGNER BILL SEMANTICS

On May 24th, Senator Wagner introduced in the United States Senate a new bill amending the Social Security Act. The bill, S-1050, is a book length document of 185 pages covering every phase of social insurance. It is presumed that none can take exception to any part of the proposals without being subject to the accusation of heartless opposition to providing the underprivileged with the benefits to which they are justly entitled.

The bill levies a direct tax of 8% on all wages and salaries of all workers in private employment up to \$3,600 of annual earnings and a direct tax of 5% on the earnings of all self-employed people up to \$3,600 per year. It is estimated that this tax would produce each year a fund in excess of Eight Billion Dollars. In all likelihood this

is the largest amount resulting from any single tax levy ever made anywhere at any time. Yet, in all of the 185 pages of text, the term "tax" does not appear save with reference to refunds prior to 1946 and to make records conform to sections of the Internal Revenue Code—pages 168 and 172. The term Social Security Contribution—page 164, is substituted for the unpopular term "tax."

Approximately \$3,142,000,000 of the total tax fund would be earmarked to provide Personal Health Services. A National Advisory Medical Policy Council is established—page 77. The Council is appointed by the Surgeon General of the Public Health Service. Its function is strictly advisory. It has authority to establish other Advisory Committees and Commissions. But, the Surgeon General is "authorized and directed to take all necessary and practical steps to arrange for Personal Health Service Benefits for all Social Security beneficiaries and their dependents"—page 72. These include general medical, special medical, general dental, special dental, home nursing, laboratory and hospitalization benefits—page 100. The Surgeon General is established by a law as the agent to dispense and pay for medical, dental, nursing and hospitalization services for an estimated 110,000,000 people.

The Bill states that the methods of administration shall insure the prompt and efficient care of individuals, promote personal relationships between physician and patient, provide incentives for professional advancement and encourage high standards in the quality of service—page 82. These are worthy objectives. They will be quoted endlessly by proponents of this legislation and by those who strive to establish centralized controls in the United States. They are nullified by direct proposals of the Amendments. The sacred nature of the physician-patient relationship is destroyed by the introduction of an administrator and the public recording of symptoms and case histories. Professional standards are automatically and dangerously lowered when

political favor takes the place of personal competence. The real incentive of the doctor is forfeited when he is made subordinate and subservient to the bureaucrat.

In the United States more than fifty million people have provided for themselves measures of health protection through insurance with private carriers. When presenting his omnibus bill to the Senate, Mr. Wagner stated:

"There has been much misunderstanding about the part that existing voluntary insurance or prepayment plans and similar agencies may play in the Social Insurance System. Let me emphasize that our bill makes a place for them to continue their good work."

But these are the facts. Participants in voluntary insurance plans or programs are exempted from the payment of the tax on that part of their earnings that is expended for the insurance premium—page 151. The tax to be paid by a worker earning \$3,600 per year would be \$144.00 annually. If a worker earning \$3,600 expends \$100 for any voluntary or group insurance program, he would pay the tax on \$3,500 of income or \$140. Under such circumstances private insurance programs could not survive.

In introducing his Bill, Senator Wagner said:

"But health insurance is NOT socialized medicine; it is not state medicine," and "I believe in the American system of Free Enterprise."

It is a fact, however, that under the proposals the Surgeon General of the Public Health Service, working under the Administrator of the Social Security Board, becomes the dispenser of all health care and the final arbiter of the mental and physical well-being of the nation. If such a core of collectivist control is ever established in this country applying to the most sacred and vital wants of every human being it would require a miracle for free enterprise in any of its forms to survive the impact.

These things the people should know.

Political Semantics has been defined as the technique of pasting soothing syrup labels on bottles of nitro glycerin.—*National Physicians Committee.*

WAGNER BILL IS STILL SOCIALIZED MEDICINE

Senator Wagner's emphatic assertion that his newly-fostered social security legislation, providing a program of vast medical care and hospitalization insurance, is not socialized medicine brought an equally emphatic protest from *The Journal of the American Medical Association*.

In its June 2 issue, *The Journal* says: "Senator Wagner went so far as to say that 'health insurance is not socialized medicine; it is not state medicine.' With this pronouncement most people with any understanding of the situation will differ. They will insist that compulsory sickness insurance with federal control is both socialized medicine and state medicine." Continuing, *The Journal's* editorial says:

"The section of greatest interest to the medical profession at this time is section 9, which would establish a national sickness insurance system. The proponents of the measure minimize its compulsory aspect in every way they possibly can. Nowhere is the word 'compulsory' used. . . . Senator Wagner emphasizes freedom of medical practice, which he says is carefully safeguarded because each insured person is entitled to choose his own doctor. But he must choose his own doctor from among the physicians or groups of physicians in the community who agree to go into the insurance system. Certainly the insured person cannot secure the application of any of the funds that he has paid for the payment of a physician who is outside the system. The statement is made that 'the participating doctors are likewise free to choose the method through which they are to be paid from the insurance fund.' As a rule, they must choose as a group either a fee-for-service plan with a fee table, a capitation fee or a salary. In the summary of the bill released by Senator Wagner the statement is made that 'the Surgeon General of the U. S. Public Health Service—a doctor—would administer the technical and professional aspects of the program.' This version of the Wagner-Murray-Dingell bill places tremendous authority in the hands of the Surgeon General, as was placed by previous versions. This

time there is to be a National Advisory Medical Policy Council, to be appointed from panels of names submitted by professional and other organizations concerned with medical services, education and hospitals and to include also a representative of the public. This council is wholly advisory and without authority. Incidentally, there is nothing in previous law that says the Surgeon General of the U. S. Public Health Service must be a physician. . . .

"Senator Wagner points out that he has consulted this time with the American Federation of Labor, the Congress of Industrial Organizations, the Physicians Forum, the Committee of Physicians for the Improvement of Medical Care and the National Lawyers Guild, among other organizations, in obtaining suggestions for modification of his previous version. He has not consulted with the American Medical Association or, as far as is known, with any of the members of its representative bodies or councils. The so-called Physicians Forum is a group of several hundred physicians, mostly inclined toward communism and practically all living in New York City. The Committee of Physicians for the Improvement of Medical Care, once known as the Committee of 400, now maintains a mailing list of around 1,000 physicians and is actually controlled by an inner group of a few physicians who do not in any way represent a majority of medical opinion. Thus the bill completely disregards the majority opinion of the 125,000 physicians who constitute the American Medical Association and who provide the major portion of medical practice for the people of the United States. The bill also disregards the 60,000 physicians now in the armed forces who have sacrificed as much as any other group in the country in the great war in which our nation is now engaged. This obstinacy is typical of the manner in which Senators Wagner and Murray and Representative Dingell have from the first endeavored to impose their notions regarding the care of the public health and of the sick on the people of the United States."

The Delaware Chronicle

Belated greetings to a near-newcomer in the field of near-medical journalism in this state! It seems that in the fall of 1942 Mr. E. A. Unger, the popular chief anesthetist of the Delaware Hospital, hit upon the idea of issuing a mimeographed bulletin devoted to news items about members of the medical, nursing and administrative staffs of the Hospital, featuring especially the letters and reports of their many ex-interns in the services. The *Chronicle* is a racy, newsy sheet that is a credit to Mr. Unger as editor and the hospital it represents. It appears at irregular times, generally four issues per year. The current issue is No. 11. The price is: "One thin dime per copy—free to all in Service."

Good luck, Mr. Unger, and keep going!

"Keep Cool"

The Public Relations Committee of the New Castle County Medical Society has obtained a radio series prepared by the Bureau of Health Education of the American Medical Association for trial broadcasting in Delaware. Mr. Gorman Walsh of WDEL has set aside a ten-minute period—9:30 to 9:40—in the morning on Tuesdays and Thursdays, for the next six weeks for the broadcasting of twelve electrically transcribed radio interviews, with June Merrill interviewing W. W. Bauer, M. D. This series bears the title "Keep Cool." The individual transcriptions are on the following subjects: No. 1, "Sun-tan"; No. 2, "Sunstroke and Heat Exhaustion"; No. 3, "Exercise in Summer"; No. 4, "Health in Swimming"; No. 5, "Water Safety"; No. 6, "Light Summer Meals"; No. 7, "Bugs"; No. 8, "Poison Ivy"; No. 9, "Keeping Cool"; No. 10, "Hiking and Biking"; No. 11, "Picnic and Business Lunches"; No. 12, "Hay Fever."

Tuberculosis can destroy the finest human material in every nation. Yet all modern knowledge shows that this disease, if fought with medical and social weapons known to us now, can be cured and largely prevented.—Harley Williams, M. D., *Amer. Rev. Tbc.*, Jan., 1945.

MISCELLANEOUS
Headquarters United States Forces
India-Burma Theater

Assam, India—American medical units have performed countless miracles on every fighting front during World War II, but few have been so close-knit or have so firmly implanted themselves as self-contained, largely self-supporting organizations as has the 20th General Hospital, situated in northern Assam near a supply base from which war materials flow to China.

The unified, cooperative, one-for-all-and-all-for-one spirit at the hospital is mainly due to its original organization at the University of Pennsylvania medical school and to the brilliant guidance of its commanding general, Brigadier General Isidor S. Ravdin, and his Executive Officer, Colonel John McK. Mitchell, a pediatrician in civilian life.

General Ravdin, for many years a prominent Philadelphia surgeon, formed the hospital as unit director in June, 1940. It was activated in May, 1942, and arrived overseas in March, 1943, as the first American Army general hospital in the then China-Burma-India theater.

Serving first as chief of surgery, General Ravdin (then a lieutenant colonel) became commanding officer in November, 1943. He was later promoted to colonel and on April 12, 1945, to brigadier general, the only general officer in command of a numbered hospital in the United States Army.

As a University of Pennsylvania unit, the hospital drew its entire medical personnel directly from the faculty of the medical school. About 40 per cent of the nurses were Pennsylvania trained. They came primarily from the University hospital and Presbyterian, Philadelphia General, Episcopal, and Bryn Mawr hospitals in the Philadelphia area.

Their common background, along with the stimulus supplied by General Ravdin and his able staff of assistants, has contributed immeasurably to the enviable record established by the hospital during its overseas service.

When the unit arrived in Assam, its location was surrounded by dense jungle, and turned into a quagmire by the monsoon rains. The few buildings available were sagging bashas, with dirt floors and leaking roofs.

There were no roads, almost no facilities—only mud.

Today the area has been increased to more than a square mile. The hospital has slightly less than 3,000 beds, just about three times its original intended capacity of 1,000. It has almost 400 separate bamboo basha buildings, with concrete floors, water-proof roofs, and mosquito-proof interiors.

Hundreds of lives have been saved and thousands of patients have been treated by the doctors and nurses of the hospital. Their medical accomplishments have become legend among the wounded of Merrill's Marauders and the Mars Task Force who paved the way for the reconquest of Burma, and among the Chinese who have reluctantly battled the Jap invader for years.

On one occasion, Major Julian Johnson, a thoracic surgeon from Narberth, Pa., was doing a difficult operation on a Chinese casualty when the soldier's heart stopped beating. Major Johnson acted quickly, cut in around the heart and massaged it until it resumed its regular thumping. The patient recovered.

Similar, tho admittedly less dramatic, incidents have not been uncommon. But the medical and surgical work became "routine" to the staff and they escape the casual visitor. What does impress the latter is the combination of statewide atmosphere, the comradeship of the personnel, and the amazing physical progress in the hospital area.

Were it not for the native construction—woven bamboo walls on the buildings and thatched roofs—the hospital might be any modern medical institution in the United States.

It has a refrigeration plant, electric light plant, water filtration and chlorination plant, two private water wells, an air conditioned typhus ward, air conditioned operating rooms, its own post office, post exchange, motor pool, utility and repair section, and other medical and military necessities.

It has a recreation building with a 7,000-person capacity inside theater, a game room, library, and snack bar equipped with an electric popcorn machine. It has two baseball diamonds, a boxing ring, three tennis courts, three badminton courts, and a volley ball and basket ball court.

Athletic facilities are used on a free-time basis by hospital personnel and on schedule for reconditioning patients in the convalescent wards. Patients in the reconditioning program use the Red Cross crafts shop, where woodworking, metal-working, and other handicraft facilities are available.

Where once there was only mud and dust, black-top surfaced streets and sidewalks now wind through the area. A thorough landscaping job has been done; palms, poinsettias, banana trees, and native flowers and shrubs have been transplanted in attractive rows around the buildings.

But the pride of the hospital—on the non-professional side—is the garden, a project pioneered by General Radvin. Twenty-four acres are under cultivation at the present time, and the area gets bigger with every planting as native gardeners, under the direction of Corporal Lee Patrick, of Epps, La., move into the jungle a little further.

Seeds for the garden were sent to Assam by the University of Pennsylvania seed club. They've resulted in bushels of lettuce, cabbage, radishes, string beans, sweet corn, tomatoes, and other American vegetables. All of the food is consumed by hospital patients and personnel as an adjunct to the regular menus.

Near the garden is a pig pen, where native porkers undergo a fattening process and eventually wind up on the hospital mess tables as ham sandwiches. The original pigs—actually wild boars—were obtained from nearby Naga hill tribesmen who brought them down out of the hills for bargaining purposes at native bazaars near the hospital.

Top population in the pig pen was 70 porkers, but the number was soon depleted by the demands of the cooks. The amateur breeders have found that the pigs refuse to become entirely domesticated. But by fencing them in, limiting their physical activity, and augmenting their diet with juicy morsels from the kitchen garbage cans, they get lazy and pick up weight—which is the idea.

For all practical purposes, the hospital has become a city in itself. Not only has it provided medical care of the highest calibre for wounded Americans and their allies, but it

has become a "home away from home" for the doctors, nurses, and GIs which comprise its staff.

Much of the credit for its total accomplishment is due directly to General Radvin, peacetime John Rhea Barton professor of surgery and director of the Harrison department of surgical research at the University of Pennsylvania.

General Radvin is quick to point out that credit for his hospital's accomplishments must be shared by his entire staff—doctors, administrative personnel, nurses, and enlisted medical personnel for as he says "I have only been in the driver's seat." Among the University of Pennsylvania staff members whose efforts have been particularly noteworthy are:

Col. Thomas E. Cook, associate professor of dental surgery at Pennsylvania, chief of the hospital dental service.

Col. John McK. Mitchell, Assistant Professor of Pediatrics at Pennsylvania, executive officer of the hospital.

Lt. Col. Francis C. Wood, associate professor of medicine and assistant director of the Robinette Foundation for the study of heart disease at Pennsylvania, present chief of the hospital medical service.

Lt. Col. James S. Forrester, director of the William Pepper Clinical Laboratory at Pennsylvania, chief of the hospital laboratory service.

Lt. Col. Philip J. Hodes, assistant professor of radiology, former chief of the hospital radiology service (recently returned to the United States).

Lt. Col. John Paul North, assistant professor of surgery at Pennsylvania, former chief of the hospital surgical service (recently returned to the United States).

Major Mary Cornelius, former member of the University Hospital staff at Pennsylvania, principal chief nurse at the hospital.

In terms of practical management, pulmonary tuberculosis can be as much a disease of the personality as it is of the lungs.—Jerome Hartz, M. D., *Psychosomatic Medicine*, January, 1944.



CAPT. DONALD W. CHEFF, M. C., A. U. S.
1913-1945

OBITUARY

The first doctor from Delaware to lose his life in World War II is Capt. Donald W. Cheff, 32, husband of Mrs. Elizabeth Cheff, who is living with her parents in Waynesboro, Pa. He was killed on April 16 on Ie Jima, the island where Ernie Pyle, war correspondent, also gave his life. Captain Cheff was born in 1913 and received his M. D. degree from the University of Nebraska in 1937. He then interned at Delaware Hospital and for a year and a half was resident physician at Brandywine Sanatorium. His wife was formerly a technician at Delaware Hospital.

Early in 1940 he began private practice, and was associated with Dr. Andrew M. Gehret, who is also in the Army. At that time he was a member of the staff of the Delaware and the Wilmington General Hospitals.

Captain Cheff was commissioned in June, 1942, and was one of the first Wilmington physicians to enter the service.

He had initial training with the 95th Division but was transferred to the 77th Division before going overseas. He served as commander of a medical battalion.

Captain Cheff served with the famous 77th (Statue of Liberty) Division, going to the Pacific with the Division. He took part in the invasion of Guam and of Leyte where he was awarded the Bronze Star medal for heroism in action. This award was noted in *THE JOURNAL*, March, 1945, page 51.

After the Leyte action, with men of the 77th he went to the small island off Okinawa on March 26 and then went into Okinawa on Easter Sunday. Later he went with the division to Ie Jima where he was killed in action.

The last letter received by Mrs. Cheff was dated April 13. In it he spoke of having been kept very busy "sewing up the slit throats of the natives," many of whom had attempted to commit suicide when the Americans invaded the island.

Captain Cheff is survived by his widow, formerly Miss Elizabeth Cline, and two children, Teddy and Roberta. To them *THE JOURNAL* offers its most sincere sympathy.

BOOK REVIEWS

Clinical Traumatic Surgery. By John J. Moorhead, M. D., Formerly Professor of Clinical Surgery, New York Post-Graduate Medical School, Columbia University. Pp. 747, with 500 illustrations. Price, \$10.00. Philadelphia: W. B. Saunders Company, 1945.

Moorhead's new book is of the same pattern as his previous one only more so: he writes exactly as he talks and is one of the few present-day authors who have either the temerity or the ability to do so. Emphasis is placed on safety and simplicity, and while some of the statements may seem dogmatic, be it remembered that they come out of the experience of a man who has had exceptional opportunities and abilities. We have not yet been able to locate his term "backalgia" in a dictionary, but if he keeps plugging at it it may make the grade some day. The three chapters on Medico-legal Phases of Trauma, Compensation Problems, and Malpractice Suits are especially valuable and timely.

This really is an excellent book and should attain wide popularity.

A Manual of Surgical Anatomy. Prepared under the Auspices of the Committee on Surgery of the Division of Medical Sciences of the National Research Council, by Tom Jones and W. C. Shepard. Pp. 195, with 267 illustrations on 138 figures, 153 in colors. Price, \$5.00. Philadelphia: W. L. Saunders Company, 1945.

This new Surgical Anatomy is one of a series, all of which so far have been excellent. The present volume is, as its title indicates, a surgical anatomy without text. We agree with Admiral McIntire when he says "the two most eminent anatomical artists in this country have prepared line drawings which for accuracy and simplicity may be considered unsurpassed." The work is condensed but yet it is complete, except for the vulva. The three-color drawings are abundant and it takes contrast colors to visualize a good many areas of the body. There is an Explanatory Index which lists and defines some structures which are not illustrated and also a number of structures which are illustrated but not labeled. Incidentally, the clear-cut labeling is another of the commendable features of the book.

We recommend the book not only for the military but also for the civilian surgeon: its

compactness will save the fatigue of combing through the larger works, and its completeness will satisfy his wants or needs ninety per cent of the time.

Management of Obstetrical Difficulties. By Paul Titus, M. D., Obstetrician and Gynecologist, St. Margaret's Memorial Hospital, Pittsburgh. 3rd Edition. Pp. 1,000, with 426 illustrations and 8 color plates. Cloth. Price, \$10.00. St. Louis: C. V. Mosby Company, 1945.

This is not a conventional text book as text books go. The fundamentals, as anatomy and physiology, normal pregnancy, labor and puerperium are omitted. Indicative of the title, the author deals entirely with obstetrical difficulties and emergencies.

A good deal of differential diagnosis is embodied in the text. Very frequently difficulties are simplified by proper diagnosis. The methods of handling obstetrical difficulties are gone into detail. Where there are differences of opinion the author does not hesitate to express his own opinion from his vast experience, as to the procedure to follow.

This third edition has been revised and much new material added. Penicillin is discussed in detail as to its use and dosage. Caudal analgesia has been added to the chapter on anesthesia. The chapter on x-ray pelvimetry has been revised and simplified. The toxemias of pregnancy have been revised, with some changes in classification and treatment. The chapter on intravenous therapy, including blood transfusion, has been rewritten and added subjects, such as Rh incompatibilities as well as erythroblastosis, have been brought up to date.

This book is a valuable adjunct to the library of the specialist, but because of the simplicity of the text and the large number of illustrations it lends itself to the general practitioner who practices obstetrics.

The Chemical Formulary, Vol. VII. Edited by Harry Bennett. Pp. 474. Cloth. Price, \$6.00. Brooklyn: Chemical Publishing Company, 1945.

This volume contains more than two thousand formulas for mixing and making thousands of products of use and interest to almost anyone (Price, \$6.00). These formulas represent millions of dollars and years of research, are simple and direct.

While previous volumes of the Chemical Formulary, issued biennially for the last twelve years, were designed primarily for ex-

perienced chemists and technicians, Vol. VII has been edited especially for laymen. Each of the seven volumes contains different material and can be used separately or as a set.

Vol. VII includes formulas covering everything imaginable in a long index ranging from adhesives to the various zinc solutions for rust prevention. It covers the latest scientific discoveries in chemistry and industry, such as the famous DDT insecticides, as well as the newest developments in cosmetics, pharmaceuticals, and plastics. Housewives will be able to make anything from cold cream to meat preservatives or roach killer. Farmers will find insecticides, fertilizers and livestock medicines easy to make at home at low cost. Students, painters, amateur and professional photographers, chemists, small businessmen and even cooks will find sections specially suited to them.

THE CHEMICAL FORMULARY will be of special assistance to war veterans wishing to start small specialty businesses. Its formulas for cosmetics, pharmaceuticals, polishes, cleaners, lubricants, adhesives, inks, and scores of other products are particularly suitable for such ventures, since very little capital would be needed as most of the products could be made with home facilities at a low initial cost.

A Textbook of Ophthalmology. By Sanford R. Gifford, M. D., Formerly Professor of Ophthalmology, Northwestern University. Third edition, revised, pp. 457, with 215 illustrations and 13 color plates. Price, \$4.00. Philadelphia: W. B. Saunders Company, 1945.

This is an excellent book for students and general practitioners. This edition brings the textbook up-to-date. New sections include further discussions of ptosis, contact glasses, cyclodiathermy, and epidemic keratoconjunctivitis. There is found the same thoroughness and care of presentation so characteristic of Dr. Gifford's publications. Of course there are many subjects that cannot be discussed thoroughly in a book of this size, but those of interest to the student and general physician are well done.

Dr. Francis Adler, who needs no introduction to the medical profession, will be Dr. Gifford's successor in future revisions of this work, and any revision by him will be of the highest quality and the most scientific that such a size will permit.

